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ABSTRACT

The report investigates the validity of career intent and job attitude statements for predicting reenlistments among 54,803 airmen in 101 enlisted specialties. Statements were made while completing Air Force occupational surveys during the period 1966-71. Frequency and percentage distributions characterizing item responses and career decisions of the sample are given. Relationships between career intent/job attitude responses and actual reenlistment decisions were studies using multiple linear regression techniques. Job attitudes were found to be substantially related to career decisions but did not provide unique contributions to predictions of career decisions when used in conjunction with career intent statements. A model-seeking exercise identified a second-degree polynomial model with career intent and time-in-service interaction vectors as the most appropriate prediction model. Separate prediction equations were obtained for a number of selected subsamples. Practical examples of forecasting reenlistment rates are illustrated. The regression model selected for the demonstration used weights derived from the total sample to predict the percentage of actual reenlistments for 30 specialties. Ten principal findings of the study are identified. Appended is a chart of Air Force specialties used in the sample. (Author/MS)

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FEASIBILITY OF ESTIMATING PERSONNEL TURNOVER FROM SURVEY DATA – A LONGITUDINAL STUDY

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October 1975
Final report for Period December 1973 – December 1974

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This final report was submitted jointly by the Personnel Research Division and the Occupational and Manpower Research Division, Air Force Human Resources Laboratory, Lackland Air Force Base, Texas 78236 under project 7719, with Hq Air Force Human Resources Laboratory (AFSC), Brooks Air Force Base, Texas 78235.

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Approved for publication.

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This report investigates the validity of career intent and job attitude statements for predicting reenlistments among 54,803 airmen in 101 enlisted specialties. Statements were made while completing Air Force occupational surveys during the period 1966 to 1971. Frequency and percentage distributions characterizing item responses and career decisions of the sample are given. Relationships between career intent/job attitude responses and actual reenlistment decisions were studied using multiple linear regression techniques. Job attitudes were found to be substantially related to career decisions but did not provide unique contributions to predictions of career decisions when used in conjunction with career intent statements. A model-seeking exercise identified a second-degree polynomial model with career intent and time-in-service interaction vectors as the most appropriate prediction

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model. Separate prediction equations were obtained for a number of selected subsamples representing two, three, and five-digit Air Force specialty code and aptitude requirement groupings. Homogeneous grouping exercises were performed to illustrate a procedure for reducing the number of subsample prediction equations to a minimum subset.

Practical examples of forecasting reenlistment rates are illustrated. The regression model selected for the demonstration used weights derived from the total sample to predict the percentage of actual reenlistments for thirty specialties. Overall, approximately 17 percent of the sample remained in service. The average difference between actual vs predicted reenlistment rates across specialties ranged from 9 percent for airmen surveyed in their first year to 8 percent, 6 percent and 2 percent for airmen in their second through fourth year of service, respectively.

PREFACE

This research was conducted under Project 7719, Air Force Personnel System Development on Selection, Assignment, Evaluation, Quality Control, Retention, Promotion, and Utilization; Task 771908, Exploration of Policies and Procedures to Improve Procurement and Project 7734, Development of Methods for Describing, Evaluating, and Structuring Air Force Occupations; Task 773405, Derivation of Methods to Provide for Career Progression and Development of Air Force Personnel. Appreciation is expressed to Sgt Mike Hutchinson of the Computer Sciences Division, for his expert programming assistance and to Dr. Joe T. Hazel of the Occupational and Manpower Research Division for his guidance during the early course of this work.

This research was performed in partial response to RPR 73-41; *Relation of Stated Career Intent/Job Satisfaction Variables to Actual Career Decisions in the Cross-Section of Airman Specialties.* Major Gerald Grewe (AFMPC/DPMMBP) served as requirements manager.

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FEASIBILITY OF ESTIMATING PERSONNEL TURNOVER FROM SURVEY DATA – A LONGITUDINAL STUDY

I. INTRODUCTION

The problems associated with excessive personnel turnover are costly in terms of the time and money necessary to train replacements and occasionally in the loss of organizational effectiveness. In the Air Force, turnover in first-term enlisted personnel is typically between 75 and 80 percent and, while the overall occupational structure is designed to operate within these constraints, periodic shortages occur in certain career specialties while in others overages are more commonplace. In managing personnel retention under the *T*otal *O*bjective *P*lan for *C*areer *A*irman *P*ersonnel (TOPCAP) system (USAF Personnel Plan, 1971), the Military Personnel Center has experienced some difficulty in anticipating surges and ebbs in the number of reenlistments by occupational specialty. One proposed solution is to survey personnel about their job attitudes and intentions to reenlist at strategic points prior to expected separation dates. If these measures have any validity in forecasting actual career decisions, appropriate remedial actions could then be taken in advance to minimize the expected shortages. The purpose of this study was to determine the basic feasibility of such a system from the standpoint of statistical accuracy.

Several recent surveys of the literature have found job attitudes to be consistently related to employee tenure (Porter & Steers, 1973; Tuttle & Hazel, 1974; Walters & Roach, 1973). Shenk and Wilbourn (1971) reporting on studies with Air Force officer personnel, found that responses to questionnaires, particularly career intent statements, provided indications of actual career decisions as much as four years in advance. Bruner (1971) noted similar relationships with enlisted personnel surveyed a year before actual separation dates. To establish more definitive guidelines about the approach, the Air Force Human Resources Laboratory (AFHRL) was asked to review the problem, determine the overall validity of career intent and job attitude statements for predicting turnover among enlisted personnel and to provide empirical evidence which might reflect differences, if any, in forecasting accuracy as a function of (a) the time interval between survey date and date of decision, and (b) membership in specific occupational specialties.

II. METHOD

Survey responses from more than 50,000 Air Force enlisted personnel surveyed as part of the Occupational Research Program (Christal, 1974) were selected for analysis. Surveys used were conducted during the period September 1966 to November 1971. Respondents in the sample ranged in age from 17 to 25 years, were predominatly male and were serving in their first four-year enlistment at the time of the survey. In the questionnaire, respondents were asked to indicate whether or not they intended to reenlist at the end of their current obligated service commitment. In addition, they were to rate their present job in terms of the interest and perceived utilization of training and talent associated with it. The format of these items is shown in Table 1. Also recorded on the questionnaire were the total months of active Federal military service (TAFMS) completed to date and the occupational specialty to which they were currently assigned. Occupations in the Air Force are identified by five-digit occupational specialty codes (AFSCs) which distinguish between career fields and between various skill levels within fields. For purposes of this analysis, airmen with 1–12 months of service were considered to be in the first TAFMS year group; those with 13–24 months were included in the second TAFMS year group, etc.

To determine reenlistment status at the completion of four years of active duty, individual records were transferred to computer files and matched with the historical airmen reenlistment and loss file (AR/L, current as of 30 September 1973) maintained by the Computational Sciences Division, AFHRL, Lackland AFB, Texas. Excluding records for persons with missing or invalid data or who had not yet reached the reenlistment decision point, the final sample contained 54,803 cases from 101 different career specialties.

Frequency and percentage distributions were used to describe characteristics of the sample and to indicate attitudinal differences between TAFMS year groups (one to four) and selected AFSCs. Relationships between career intent/job attitude responses and actual career decisions were investigated by

Table 1. Statements of Career Intent and Job Attitudes

Career Intent (CI)		Job Interest (JI)		Utilization of Talent and Training (TT)	
I Plan to Reenlist:[a]		I Find my Job:		My Job Utilizes my Talents and Training:	
No, I Plan to Retire	☐ 1	Extremely Dull	☐ 1	Not at All	☐ 1
No, I Plan to Separate without Retirement Benefits	☐ 2	Very Dull	☐ 2	Very Little	☐ 2
Uncertain, Probably No	☐ 3	Fairly Dull	☐ 3	Fairly Well	☐ 3
Uncertain, Probably Yes	☐ 4	So-So	☐ 4	Quite Well	☐ 4
Yes	☐ 5	Fairly Interesting	☐ 5	Very Well	☐ 5
		Very Interesting	☐ 6	Excellently	☐ 6
		Extremely Interesting	☐ 7	Perfectly	☐ 7

[a]The first alternative (No, I Plan to Retire) was not considered a valid response option for first-term personnel. The small number of respondents who marked this alternative were deleted from the analysis.

application of multiple linear regression techniques as outlined by Bottenberg and Ward (1963). In these analyses, predictions were based on item responses and group membership in one of the four TAFMS year groups. The criterion variable in each case was reenlistment status; coded one if reenlisted, zero otherwise. The relative contributions of the job attitude questions in predicting reenlistment were first evaluated to determine if they contributed uniquely to the overall prediction system. On the basis of these analyses, models to predict reenlistment on the basis of career intent were identified using the total sample of respondents while separate equations were obtained for a number of selected subsamples representing two, three, and five-digit AFSCs, aptitude areas, and minimum aptitude requirements within areas. Homogeneous grouping exercises were performed to explore possibilities of grouping separate AFSC equations on the basis of empirical similarities. Throughout the analyses, F-statistics were used where applicable to test for statistical significance.

III. RESULTS

A distribution of respondents across major AFSCs included in the survey, means and standard deviations for responses to the career intent/job attitude statements and percentages actually retained in the service is shown in Table 2. For AFSCs included in the table, mean values on each of the statements and percentages retained show wide disparities between specialties. Tabled values for mean career intent range from a low of 2.55 in the Auto Flight Control Systems Specialty (325X0) to 3.10 for Jet Engine Mechanics (432X0). Average job interest was highest for the Avionic Navigational Systems Specialists (328X1) and lowest for Aerospace Control and Warning System Operators (276X0). The extent to which the job was reported to utilize training and talents was highest for Computer Operators and lowest again for Auto Flight Control Systems Specialists. Percentages retained beyond minimum service requirements averaged 16.7 percent for the total sample and ranged from a low of 10 percent (Air Passenger Specialists; 605X0) to a high of 31 percent (Air Traffic Control Specialists; 272X0). For a complete listing of AFSCs included in the analysis, see Appendix A.

Career Intent and Job Attitudes

Although the career intent and job attitude data are cross-sectional in the sense that responses from different TAFMS groups were obtained in the same survey, it is interesting to note the pattern of differences among respondents in their first through fourth year of service (Tables 3 through 5). In Table 3,

Table 2. **Means and Standard Deviations for Career Intent/Job Attitude, Responses, and Percent Retained for Selected AFSC's**

Group ID	AFSC	Career Specialty	Career Intent			Job Interest		Utilization of Talent		Percent Retained
			N	Mean	SD	Mean	Sd	Mean	SD	
1	252X1	Weather Observer	679	2.72	.84	4.45	1.49	3.33	1.39	24.30
2	272X0	Air Traffic Control	373	2.88	.78	4.76	.58	3.80	1.19	31.37
3	276X0	Aerospace Contrl & Warning Sys	672	2.71	.82	3.03	1.36	1.98	1.09	11.90
4	291X0	Comm Center Spec	657	2.62	.70	4.13	1.55	3.05	1.32	15.37
5	293X3	Radio Operator	557	2.65	.73	3.06	1.39	1.99	1.12	19.21
6	304X4	Ground Radio Comm Eq Repmn	537	2.58	.77	3.55	1.31	2.38	1.22	17.50
7	325X0	Auto Flt Cont Sys Spec	444	2.55	.77	3.25	1.27	1.97	1.04	15.77
8	328X0	Avionic Comm Spec	666	2.88	.82	5.13	1.19	3.83	1.26	15.62
9	328X1	Avionic Nav Sys Spec	716	2.90	.81	5.22	1.15	3.90	1.32	16.06
10	328X4	Avionic In/Radar Nav Sys Spec	1,242	2.81	.83	4.97	1.41	3.67	1.41	17.15
11	421X2	Acft Pneudraulic Repmn	879	2.77	.78	4.90	1.40	3.90	1.37	17.97
12	421X3	Aerospace Gnd Eqp Rpmn	899	2.68	.79	3.87	1.58	2.91	1.24	22 58
13	431X1A	Acft Maint Spec (Rec Eng)	628	2.87	.78	4.80	1.39	3.53	1.36	27.39
14	431X1C	Acft Maint Spec (Jet/1-2 Eng)	1,617	2.94	.77	4.97	1.36	3.83	1.41	26.47
15	431X1E	Acft Maint Spec (Jet/Mul Eng)	1,185	2.95	.80	4.78	1.44	3.61	1.42	24.81
16	432X0	Jet Engine Mechanic	738	3.10	.93	4.41	.87	3.46	1.22	16.12
17	443X0G	Missile Mechanic	405	2.98	.98	3.04	1.35	2.01	1.20	28.40
18	461X0	Munitions Maint Spec	1,497	2.81	.83	4.36	1.52	3.11	1.36	14.09
19	462X0	Weapons Mechanic	1,701	2.78	.83	4.20	1.61	3.15	1.39	14.40
20	511X0	Computer Operator	1,430	2.79	.82	5.25	1.38	4.04	1.48	11.26
21	534X0	Air Frame Repair Spec	840	2.75	.76	4.90	1.33	3.80	1.35	12.74
22	551X0	Pavements Maint Spec	760	2.78	.78	3.35	1.71	2.45	1.30	10.39
23	571X0	Fire Protection Spec	1,945	3.04	.86	4.73	1.54	3.53	1.50	16.14
24	605X0	Air Passenger Spec	518	2.80	.79	3.66	1.30	2.37	1.38	9.65
25	631X0	Fuel Specialist	1,217	2.77	.77	4.04	1.61	3.04	1.47	17.58
26	702X0	Admin Spec	648	2.86	.94	3.15	1.39	2.10	1.18	24.23
27	811X0	Security Spec	2,660	2.93	.83	4.15	1.86	3.13	1.62	10.23
28	902X0	Medical Svc Spec	1,023	2.59	.76	4.78	1.65	3.38	1.54	18.28
29	922X0	Aircrew Lif Sup Spec	644	2.65	.81	3.78	1.66	2.65	1.38	20.65
30	981X0	Dental Spec	629	2.61	.72	4.84	1.50	3.46	1.56	14.31
	Total Sample		54,803[a]	2.81	.84	4.65	1.57	3.46	1.48	16.73

[a]Includes cases not represented in selected AFSC's shown in table.

Table 3. **Frequency and Percentage Distribution of Career Intent Responses by TAFMS Year Group[a]**

Career Intent Category	TAFMS at Time of Survey									
	First Year		Second Year		Third Year		Fourth Year		Total	
	N	%	N	%	N	%	N	%	N	%
Yes	192	3.32	506	3.07	687	4.01	881	6.83	2,266	4.33
Probably Yes	1,169	20.22	2,967	18.03	2,460	14.34	1,150	8.91	7,746	14.81
Probably No	2,717	47.01	7,393	44.92	7,089	41.34	3,209	24.86	20,408	39.02
No	1,702	29.45	5,591	33.97	6,914	40.31	7,667	59.41	21,875	41.83
Total	5,780	100	16,457	100	17,150	100	12,908	100	52,295	100

[a]Table excludes cases with missing or invalid response data (N = 2,508).

the proportion with definite plans to reenlist increases slightly over time from three to seven percent. The most noticeable change occurs in the uncertain categories which constitutes 67 percent of the first-year sample yet only 34 percent of the fourth-year group. The percentage of airmen who definitely plan to separate increases from 29 percent in the first year to 59 percent in the fourth. These data indicate that only about a third of enlistees in their first year of service have definite preconceived notions about subsequent reenlistment. The uncertainty which characterizes the first and second years is not as evident in the third and fourth years as increasing exposure to service life crystalizes career intent attitudes.

Table 4. **Frequency and Percentage Distribution of Job Interest Responses by TAFMS Year Group[a]**

Job Interest Category	TAFMS at Time of Survey									
	First Year		Second Year		Third Year		Fourth Year		Total	
	N	%	N	%	N	%	N	%	N	%
Very Dull	541	9.17	1,622	9.6	2,034	11.6	2,076	15.8	6,273	11.7
Fairly Dull	345	5.8	1,092	6.5	1,285	7.3	1,059	8.1	3,781	7.1
So-So	871	14.6	2,581	15.3	3,178	18.2	2,395	18.2	9,025	16.9
Fairly Interesting	2,054	34.4	5,701	33.9	5,745	32.8	3,958	30.2	17,458	32.7
Very Interesting	2,156	36.1	5,832	34.7	5,265	30.1	3,638	27.7	16,891	31.6
Total	5,967	100	16,828	100	17,507	100	13,126	100	53,428	100

[a]Table excludes cases with missing or invalid response data (N = 1,375).

Table 5. **Frequency and Percentage Distribution of Talent and Training Utilization Responses by TAFMS Year Group[a]**

Utilization Category	TAFMS at Time of Survey									
	First Year		Second Year		Third Year		Fourth Year		Total	
	N	%	N	%	N	%	N	%	N	%
Very Little	1,631	27.5	4,542	27.1	4,970	28.5	4,205	32.1	15,348	28.8
Fairly Well	1,603	27.0	4,792	28.6	5,134	29.4	3,691	28.2	15,220	28.6
Quite Well	1,008	17.0	2,677	16.0	2,644	15.1	1,803	13.8	8,132	15.3
Very Well	1,163	19.6	3,188	19.0	3,159	18.1	2,199	16.8	9,709	18.2
Excellently	528	8.9	1,572	9.3	1,561	8.9	1,189	9.1	4,851	9.1
Total	5,933	100	16,772	100	17,468	100	13,087	100	53,260	100

[a]Table excludes cases with missing or invalid response data (N = 1,543).

Just as career intent statements change from the first through the fourth years, both the job attitude measures show differences which vary with time in service (Tables 4 and 5). Average job attitudes become increasingly more negative as time-in-service increases. Of first-year airmen, 15 percent report that their jobs are dull and 28 percent report that their talents and training are utilized very little or not at all. For the fourth-year airmen, 24 percent find their jobs dull and 32 percent feel under-utilized. At the time that jobs should be becoming more demanding with increased technical and supervisory responsibility, job interest and perceived utilization of talents are actually decreasing. Gould (1972, 1974) and Christal (1974), found that the negative trend may be much more pronounced when specific specialties are considered.

Table 6, which shows the intercorrelations between responses to the job attitude and career intent statements, indicates a high degree of relationship between measures of job interest and reported utilization of training and talents (R = .63). The relationship between these statements and career intent was not as pronounced (R = .31 and .27, respectively).

Table 6. **Intercorrelations Between Career Intent and Job Attitude Statements**

Survey Items	Career Intent	Job Interest	Utilization of Talents
Career Intent	1.0000	.3065	.2719
Job Interest	.3064	1.0000	.6282
Utilization of Training and Talents	.2719	.6282	1.0000

Note. — In samples of this size, a correlation of .08 or greater is significant beyond the .01 level.

Relationships between Career Intent/Job Attitudes and Career Decisions

The relationship between career intent statements and career decisions is shown in Table 7 which contains the percentage of reenlistments and losses at each level of career intent for four time intervals between survey date and time of reenlistment decision. As might be expected, there is an increasing tendency to reenlist as career intent responses become more positive. For respondents surveyed in their first year of active duty, 36 percent of those expressing definite plans to reenlist actually do while only 13 percent reenlist of those expressing definite negative intent. Comparisons across TAFMS intervals indicate that the relationships between intent and actual decision are more pronounced as the time between survey date and reenlistment action become shorter. Of those surveyed during the fourth year, 76 percent of the "definitely yes" category reenlisted versus four percent of airmen responding "definitely no."

Tables 8 and 9 demonstrate that measures of job interest and utilization of talent and training were also related to career decisions although to a lesser extent than was the career intent statement. Again it will be noted that the magnitude of relationship between these two measures and the criterion increases as the interval between survey and reenlistment decision decreases. Of those surveyed during their first year of service, 14 percent of those reporting very dull jobs reenlisted versus 22 percent of those reporting very interesting jobs. For fourth-year airmen, only six percent reporting very dull jobs (response categories 1-2) reenlisted while 26 percent of those reporting very interesting jobs (response categories 6-7) reenlisted. Similar findings were noted for the utilization measure as shown in Table 9.

Regression Analyses

Several regression analyses were performed to quantify the relationships between expressed career intent/job attitudes and career decisions and to provide prediction systems by which future reenlistment actions could be estimated. The goals of the analyses were to simplify the final form of the prediction model, to group subpopulations into homogeneous categories based on similarity of regression equations, and finally to establish the efficiency of the group prediction systems. The first analysis was performed to determine if information from both the career intent and job attitude statements were necessary to forecast reenlistments. To address this question, the accuracy of prediction using a composite equation containing information from the career intent statement, job interest and utilization of talent and training was compared to the accuracy obtained using the best single predictor of the three; that of the career intent

Table 7. **Frequency and Percentage of Reenlistments and Separations by TAFMS Year Group and Career Intent Response Category[a]**

TAFMS	Reenlistment Category	Career Intent Response				
		Yes	Probably Yes	Probably No	No	Total
First Year	Reenlist					
	N	70	306	490	218	1,084
	%	36.5	26.2	18.0	12.8	18.8
	Separate					
	N	122	863	2,227	1,484	4,696
	%	63.5	73.8	82.0	87.2	81.3
	Total					
	N	192	1,169	2,717	1,702	5,780
	%	100	100	100	100	100
Second Year	Reenlist					
	N	200	767	1,195	601	2,763
	%	39.5	25.9	16.2	10.8	16.8
	Separate					
	N	306	2,200	6,198	4,990	13,694
	%	60.5	74.2	83.8	89.3	83.2
	Total					
	N	506	2,967	7,393	5,591	16,457
	%	100	100	100	100	100
Third Year	Reenlist					
	N	430	888	1,049	493	2,860
	%	62.6	36.1	14.8	7.1	16.7
	Separate					
	N	257	1,572	6,040	6,421	14,290
	%	37.4	63.9	85.2	92.9	83.3
	Total					
	N	687	2,460	7,089	6,914	17,150
	%	100	100	100	100	100
Fourth Year	Reenlist					
	N	669	586	477	312	2,044
	%	75.9	51.0	14.9	4.1	15.8
	Separate					
	N	212	564	2,732	7,356	10,864
	%	24.1	49.0	85.1	95.9	84.2
	Total					
	N	881	1,150	3,209	7,668	12,908
	%	100	100	100	100	100
All Years Combined	Reenlist					
	N	1,369	2,547	3,211	1,624	8,751
	%	60.4	32.9	15.7	7.4	16.7
	Separate					
	N	897	5,199	17,197	20,251	43,544
	%	39.6	67.1	84.3	92.6	83.3
	Total					
	N	2,266	7,746	20,408	21,875	52,295
	%	100	100	100	100	100

[a]Table excludes cases with missing or invalid response data (N = 2,508).

Table 8. **Frequency and Percentage of Reenlistments and Separations by TAFMS Year Group and Job Interest Response Category[a]**

TAFMS	Reenlistment Category	Job Interest Response					
		Very Dull[b]	Fairly Dull	So-So	Fairly Interesting	Very Interesting[c]	Total
First Year	Reenlist						
	N	77	49	132	373	481	1,112
	%	14.2	14.2	15.1	18.2	22.3	18.6
	Separate						
	N	464	296	739	1,681	1,675	4,855
	%	85.8	85.8	84.9	81.8	77.7	81.4
	Total						
	N	541	345	871	2,054	2,156	5,967
	%	100	100	100	100	100	100
Second Year	Reenlist						
	N	169	145	374	932	1,182	2,802
	%	10.4	13.3	14.5	16.3	20.3	16.7
	Separate						
	N	1,453	947	2,207	4,769	4,650	14,026
	%	89.6	86.7	85.5	83.7	79.7	83.3
	Total						
	N	1,622	1,092	2,581	5,701	5,832	16,828
	%	100	100	100	100	100	100
Third Year	Reenlist						
	N	177	130	442	954	1,170	2,873
	%	8.7	10.1	13.9	16.6	22.2	16.4
	Separate						
	N	1,857	1,155	2,736	4,791	4,095	14,634
	%	91.3	89.9	86.1	83.4	77.8	83.6
	Total						
	N	2,034	1,285	3,178	5,745	5,265	17,507
	%	100	100	100	100	100	100
Fourth Year	Reenlist						
	N	130	108	289	621	917	2,065
	%	6.3	10.2	12.1	15.7	25.2	15.7
	Separate						
	N	1,946	951	2,106	3,337	2,721	11,061
	%	93.7	89.8	87.9	84.3	74.8	84.3
	Total						
	N	2,076	1,059	2,395	3,958	3,638	13,126
	%	100	100	100	100	100	100
All Years Combined	Reenlist						
	N	5,530	432	1,237	2,880	3,750	8,852
	%	8.8	11.4	13.7	16.5	22.2	16.6
	Separate						
	N	5,720	3,349	7,788	14,578	13,141	44,576
	%	91.2	88.6	86.3	83.5	77.8	83.4
	Total						
	N	6,273	3,781	9,025	17,458	16,891	53,428
	%	100	100	100	100	100	100

[a]Table excludes cases with missing or invalid response data (N = 1,375).

[b]Response categories 1 and 2 combined.

[c]Response categories 6 and 7 combined.

Table 9. **Frequency and Percentage of Reenlistments and Separations by TAFMS Year Group and Talent and Training Utilization of Response Category[a]**

TAFMS	Reenlistment Category	Utilization Response: Very Little[b]	Fairly Well	Quite Well	Very Well	Excellently[c]	Total
First Year	Reenlist						
	N	256	275	184	269	120	1,104
	%	15.7	17.2	18.3	23.1	22.7	18.6
	Separate						
	N	1,375	1,328	824	894	408	4,829
	%	84.3	82.8	81.8	76.9	77.3	81.4
	Total						
	N	1,631	1,603	1,008	1,163	528	5,933
	%	100	100	100	100	100	100
Second Year	Reenlist						
	N	584	738	484	612	372	2,790
	%	12.9	15.4	18.1	19.2	23.6	16.6
	Separate						
	N	3,958	4,054	2,193	2,576	1,201	13,982
	%	87.1	84.6	81.9	80.8	76.4	83.4
	Total						
	N	4,542	4,792	2,677	3,188	1,573	16,772
	%	100	100	100	100	100	100
Third Year	Reenlist						
	N	580	800	488	658	342	2,868
	%	11.7	15.6	18.5	20.8	21.9	16.4
	Separate						
	N	4,390	4,334	2,156	2,501	1,219	14,600
	%	88.3	84.4	81.5	79.2	78.1	83.6
	Total						
	N	4,970	5,134	2,644	3,159	1,561	17,468
	%	100	100	100	100	100	100
Fourth Year	Reenlist						
	N	402	502	340	500	320	2,064
	%	9.6	13.6	18.9	22.7	26.9	15.8
	Separate						
	N	3,803	3,189	1,463	1,699	869	11,023
	%	90.4	86.4	81.1	77.3	73.1	84.2
	Total						
	N	4,205	3,691	1,803	2,199	1,189	13,087
	%	100	100	100	100	100	100
All Years Combined	Reenlist						
	N	1,822	2,315	1,496	2,039	1,154	8,826
	%	11.9	15.2	18.4	21.0	23.8	16.6
	Separate						
	N	13,526	12,905	6,636	7,670	3,697	44,434
	%	88.1	84.8	81.6	79.0	76.2	83.4
	Total						
	N	15,348	15,220	8,132	9,709	4,851	53,260
	%	100	100	100	100	100	100

[a]Table excludes cases with missing or invalid response data (N = 1,543).

[b]Response categories 1 and 2 combined.

[c]Response categories 6 and 7 combined.

statement. The difference between the two multiple correlations (R1 = .3589, R2 = .3580) was not considered to be of practical significance and the job attitude measures were dropped from further consideration for the remainder of the study. These findings would tend to support the view that the career intent statement functions as a composite indicator of other underlying causative influences; some were measured in this study (i.e., job interest, utilization of talent and training) and some were not (i.e., external economic conditions).

In the remaining exercises the four TAFMS categories were treated as separate subsamples because of recognized differences in the accuracy of prediction at each level. For respondents within each of the four TAFMS categories, a starting model of the form shown in Table 10 was assumed. Model 1 required that four separate parameter values be estimated for each TAFMS year group. The accuracy of prediction obtained with this model, as evidenced by the multiple correlation between predicted and actual criterion values, is shown in Table 11. Correlations ranged from .14 for statements obtained during the first year of service to .17, .37, and .53 for statements obtained during the second, third, and fourth years, respectively.

For practical application to smaller samples of data, this model has certain disadvantages. In selected AFSCs, some of the career intent categories may contain too few cases to provide reliable estimates of the parameters. Moreover, the increased power of a model requiring fewer estimated parameters would likely offset any loss in predictive accuracy (i.e., by permitting interpolation of estimates for which there are no observations). To determine if simpler, more parsimonious models could be used as effective substitutes, several sets of restrictions were imposed on the starting model. The initial set resulted in the second model shown in Table 10, in which the observed relationships were assumed to be curvilinear in their most complex form.

Another more restrictive set of assumptions resulted in a linear model 3 where differences in probability of reenlistment between adjacent career intent categories were assumed to be constant.

The fourth and final model to be considered made use of only a subset of the four possible career intent response categories. Rather than distinguishing between four levels of intent, those indicating definite or probable reenlistment intentions were contrasted with those expressing some doubt about reenlistment combined with those expressing negative intentions to reenlist. This equation, termed the Simplex model, is shown as model 4. This model most nearly corresponds to the procedure in which reenlistment forecasts are based solely on the number of respondents expressing positive reenlistment intentions versus those which do not.

The accuracy of prediction obtained with models 2 through 4 are also shown in Table 11. Results of F-tests comparing the various models separately for each TAFMS year group are summarized in Table 12. These data indicated no significant differences between Models 1 and 2 in three of the four TAFMS group comparisons. In the fourth year comparison, the differences between the two models were found only in the third decimal of the squared multiple correlation. Model 3, which assumed a linear relationship, failed to replicate the more complex model in all the comparisons within year groups as did the simplex model 4. On the basis of these results and the *a priori* reservations about the starting model, it was concluded that the curvilinear model 2 was sufficiently accurate in most cases to serve as a basis for estimating reenlistment decisions. Figure 1 shows the model 2 equations, designated 2.1 through 2.4, to correspond with each of the four TAFMS year groups, and the resulting plots for the total sample. The most striking characteristic of these data is the obvious discontinuity in the accuracy of the statements as a function of when they were obtained. The first and second year equations are quite similar, both yielding fairly low correlations with the criteria. It appears that at some time between the second and third year of service, the validity of the career intent statement shows a marked improvement as evidenced by the increase in correlation from .17 to .37 in the third year and .53 in the fourth. In terms of probability statements, the chances of reenlistment, given a positive career intent response, increase from approximately .37 for responses obtained in the first two years to .66 and .74 for those obtained in the third and fourth years of service.[1]

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[1]These values were obtained by substituting the appropriate CI value (2, 3, 4, or 5) into the model 2 equations for TAFMS groups 1 through 4 in turn. For example, to estimate the reenlistment probability of a person indicating positive intention in his fourth year of enlistment, the values "5" and "25" were substituted for C and C^2 in the formula for model 2 (4th year group):

$$Y = .0813 - .1279(C) + .0519(C^2) = 74.$$

Table 10. **Regression Models Defining Hypothesized Relationships Between Career Intent and Career Decision**

Model Number	Functional Form	Equation	Definition of Terms
1	Categorical	$Y = a_1 X^{(1)} + a_2 X^{(2)} + a_3 X^{(3)} + a_4 X^{(4)}$	Y = dichotomous criterion vector coded 1 if reenlisted; 0 otherwise $a_1 - a_4$ = unknown parameter estimates $X^{(1)} - X^{(4)}$ = mutually exclusive categorical predictor vectors based on career intent statements. $X^{(1)}$ was coded 1 if the corresponding element in Y was observed on a person responding with definite intentions to reenlist; 0 otherwise. $X^{(2)} - X^{(4)}$ were similarly coded for the three remaining career intent responses.
2	Curvilinear	$Y = b_0 U + b_1 C + b_2 C^2$	$b_0 - b_2$ = unknown parameter estimates U = unit vector C = predictor vector containing career intent responses coded 2 through 5 (i.e., 2 = definitely will not reenlist; 5 = definitely will reenlist) C^2 = predictor vector containing squared career intent responses
3	Linear	$Y = c_0 U + c_1 C$	$c_0 - c_1$ = unknown parameter estimates U = unit vector C = predictor vector containing career intent responses coded 2 through 5
4	Simplex	$Y = d_0 U + d_1 X^P$	$d_0 - d_1$ = unknown parameter estimates U = unit vector X^P = dichotomous predictor vector coded 1 if the corresponding element in Y was observed on a person expressing definite or probable intentions to reenlist; 0 otherwise

Table 11. **Multiple Correlations[a] Between Career Intent Response and Career Decision for TAFMS Year Groups 1–4**

Model	Functional Form	Parameters Estimated	TAFMS at Time of Survey				
			First Year	Second Year	Third Year	Fourth Year	Total
1	Categorical	16	.142	.166	.367	.533	.358
2	Curvilinear	12	.141	.166	.367	.530	.357
3	Linear[b]	8	.137	.165	.348	.519	.344
4	Simplex	8	.084	.108	.252	.446	.249

[a]Due to the large N's on which these estimates are based, all of the correlations shown are significant at the .01 level.

[b]Estimates for the linear models correspond to simple pearson product-moment correlations between caree intent and career decision (point bi-serial correlation).

Table 12. **Summary of F-Tests to Determine the Significance of Selected Functional Relationships Between Career Intent and Career Decision**

TAFMS	Comparison[a]	R^2 Full	R^2 Rest	d_f1	d_f2	F
First Year	1 vs 2	.0202	.0199	1	5776	1.77[ns]
	1 vs 3	.0202	.0188	2	5776	4.13*
	1 vs 4	.0202	.0071	2	5776	38.62**
Second Year	1 vs 2	.0276	.0276	1	16453	0.0[ns]
	1 vs 3	.0276	.0272	2	16453	3.38*
	1 vs 4	.0276	.0117	2	16453	134.52**
Third Year	1 vs 2	.1347	.1347	1	17146	0.0[ns]
	1 vs 3	.1347	.1211	2	17146	134.65**
	1 vs 4	.1347	.0635	2	17146	676.93**
Fourth Year	1 vs 2	.2841	.2809	1	12904	57.68**
	1 vs 3	.2841	.2694	2	12904	132.48**
	1 vs 4	.2841	.1989	2	12904	767.84**

[a]1 – categorical; 2 – curvilinear; 3 – linear; 4 – simplex.

*Significant beyond the .05 level.

**Significant beyond the .01 level.

[ns]Non-significant.

AFSC Differences

As a preliminary step in the investigation of career field differences in these relationships, separate regression equations were developed for each of the 30 five-digit AFSCs shown in Table 2. Occupations were selected for separate analysis on the basis of having sufficient sample size to provide relatively stable estimates of the parameters involved. To determine whether there were significant differences in the equations, the accuracy of prediction obtained by using 30 separate equations was compared with that obtained using a single common equation for all AFSCs combined. The results of this comparison are presented in Table 13 together with similar comparisons for separate equations based on three and two-digit AFSC group membership. Also shown in Table 13 are the full and restricted model R^2s obtained when AFSCs were grouped according to minimum aptitude requirements and general aptitude areas. F-tests for these comparisons were not considered appropriate because of a certain degree of overlap between groups. For this reason, however, the estimated differences in R^2 values may be taken as conservative.

Table 13. **Summary of F-Tests Comparing an Aggregate Model with Models Using Separate Equations**

Subgroup Type	R^2 Full	R^2 Rest	d_f1	d_f2	F
Five-digit AFSC	.1511	.1009	348	28780	4.90**
Three-digit AFSC	.1477	.1047	336	39433	5.94**
Two-digit AFSC	.1444	.1129	300	48971	6.03**
Min Apt Groups	.1260	.1123	143	>50000	NC
Aptitude Area	.1180	.1150	35	>50000	NC

**Significant beyond the .01 level.

NC – Not computed; several Air Force AFSC's can be categorized into more than one aptitude area. Since this created some overlap between the groups, it was not deemed appropriate to compute F ratios and associated probabilities for these comparisons.

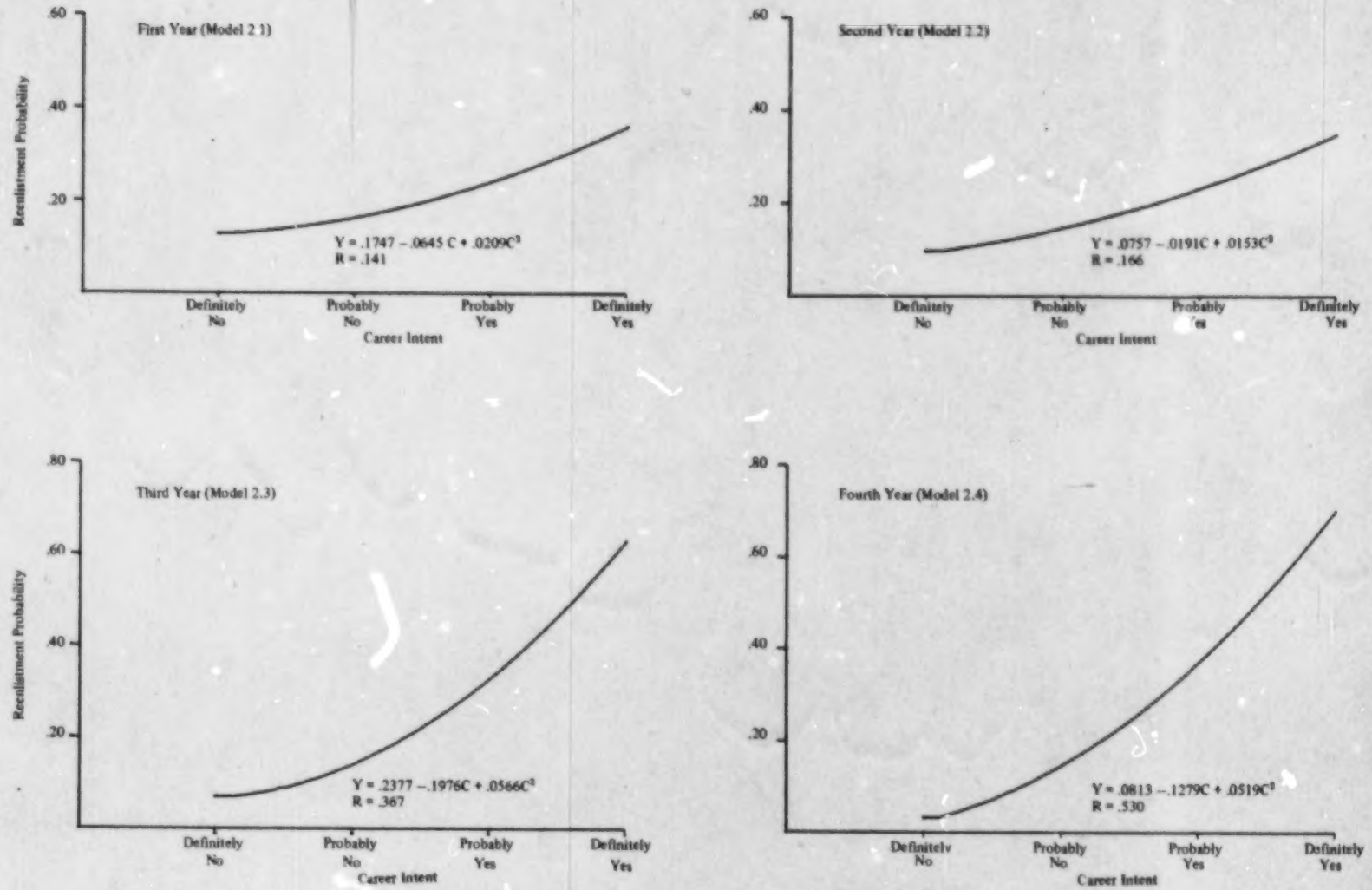

Figure 1. **Relationships between career intent and career decision by TAFMS year group.**

In all cases where F-statistics were computed, the difference in predictive accuracy across all TAFMS groups combined were significant beyond the .01 level. Although the large N's involved in these comparisons require that consideration be given to the practical importance of the results, it would be reasonable to conclude that at least two or more separate equations would be desirable to estimate reenlistment decisions for operational purposes. The decision about which level of aggregation to choose (five digit vs three digit vs two digit, etc.) is of course dependent on a number of factors such as the availability and sophistication of computing machinery and differential flow-rates through the various AFSC categories. The basic statistical strategy would be to develop separate equations for each five-digit AFSC. Since some of these groups would not have sufficient numbers of cases on which to base a separate analysis, they could be aggregated to the three-digit level and even to the two-digit level if sample size remained a problem. Once defined, the number of final equations could then be further reduced based on the empirical similarities between them. Those AFSCs having similar equations could be clustered into more or less homogeneous sets so that the fewest possible distinctions would be made between AFSC categories.

The hierarchical grouping procedure defined by Bottenberg and Christal (1961) would be useful in this context. The first stage of this procedure requires N separate equations as input; one for each subgroup of interest. During the first iteration, a search is made for the two subgroup equations which, if combined, would result in the minimum loss of predictive accuracy. These subgroups are redefined as a single group leaving N-1 groups for further consideration. The hierarchical grouping is continued until all subgroup equations have been included into a single cluster. In reviewing the results of these exercises, consideration is given to that stage at which the amount of loss in predictive accuracy exceeds the marginal benefits derived from retaining fewer equations. To illustrate the approach, grouping exercises were performed on the set of 30 equations developed in the previous analyses. Figure 2 shows the progressive loss in accuracy at each of the grouping stages. Figure 3 shows the results of this analysis beginning with the ten-group solution. It is interesting to note the composition of the final two subgroups. A *post hoc* comparison of the AFSCs included revealed that all but one of the subgroup I specialties had a variable reenlistment bonus (VBR, multiple 3 or 4) associated with it during the time of the study while none of the subgroup II specialties could be so categorized. The plots for these two groups (shown in Figure 4) indicate that for persons in the VRB group surveyed in the first three years, there was a much higher likelihood of reenlistment across all categories of career intent as compared with the non-VRB specialties.

Update Requirements

As is the case with most behavioral phenomenon, generalizations appropriate at a given time cannot be expected to apply indefinitely. In the present context, for example, it would be helpful to know the extent to which the equations defining relationships between intent and career decisions would change over time so that appropriate update requirements could be more firmly established. Unfortunately, there is only limited data from the present study which addresses this problem directly. In four AFSCs, results of Time 1/Time 2 surveys administered an average of four years apart were available for analysis. To determine if there were significant changes in the meaning of the career intent statements over time within each of the career fields, models using separate equations for both Time 1 and Time 2 groups were compared to restricted models using a common equation for both year groups. It was evident in all of the comparisons, as shown in Table 14, that significant changes had occurred in the interval between surveys. This would indicate the necessity for updating the information about AFSCs more frequently than every four years. In addition to the Time 1/Time 2 comparisons, it was also possible to characterize real-time differences in these relationships. Figure 5 shows the regression plots for AFSCs grouped according to survey date. Although these comparisons are partially confounded by virtue of the fact that occupations were not randomly sampled within each time period, there did seem to be a significant trend toward increasing accuracy for the later surveys ($F = 47.82$, $d_f = 48/52299$, $p < .01$). Again it was evident that frequent updating could be expected to improve the accuracy of prediction in an operational setting.

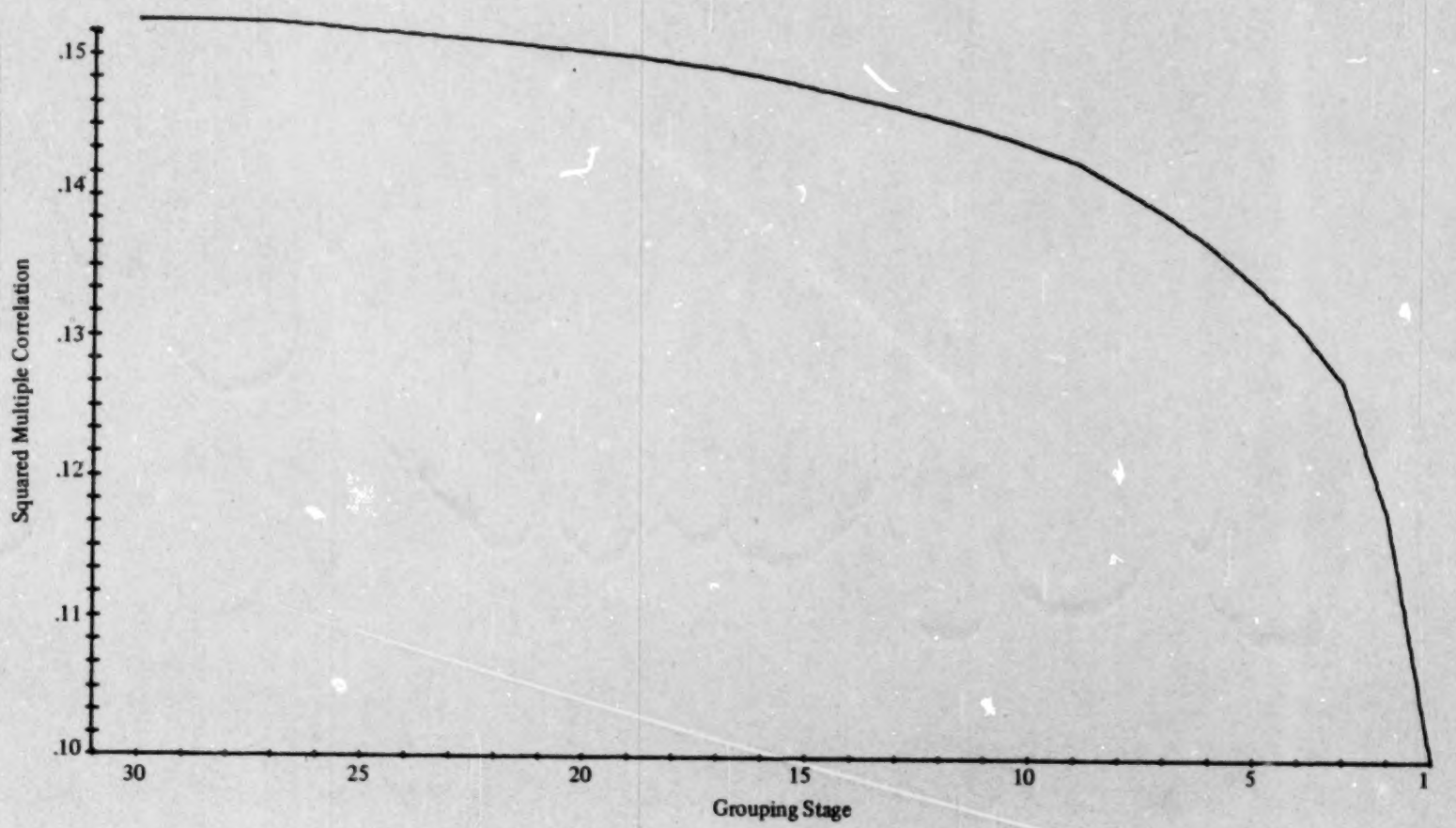

Figure 2. **Squared multiple correlations obtained during hierarchical grouping exercise - five - digit AFSC's.**

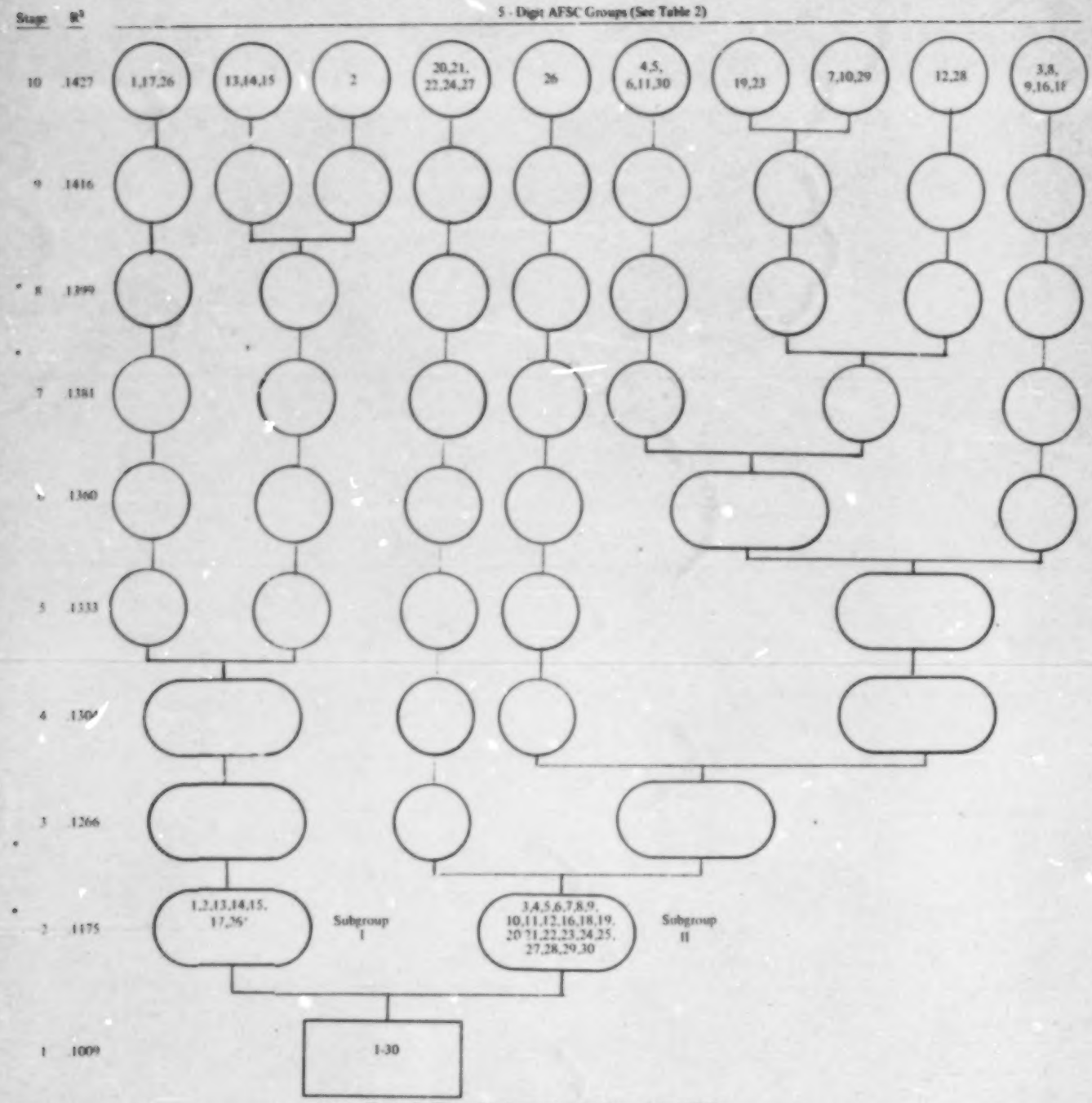

Figure 3. **Hierarchical grouping for five - digit AFSC's.**

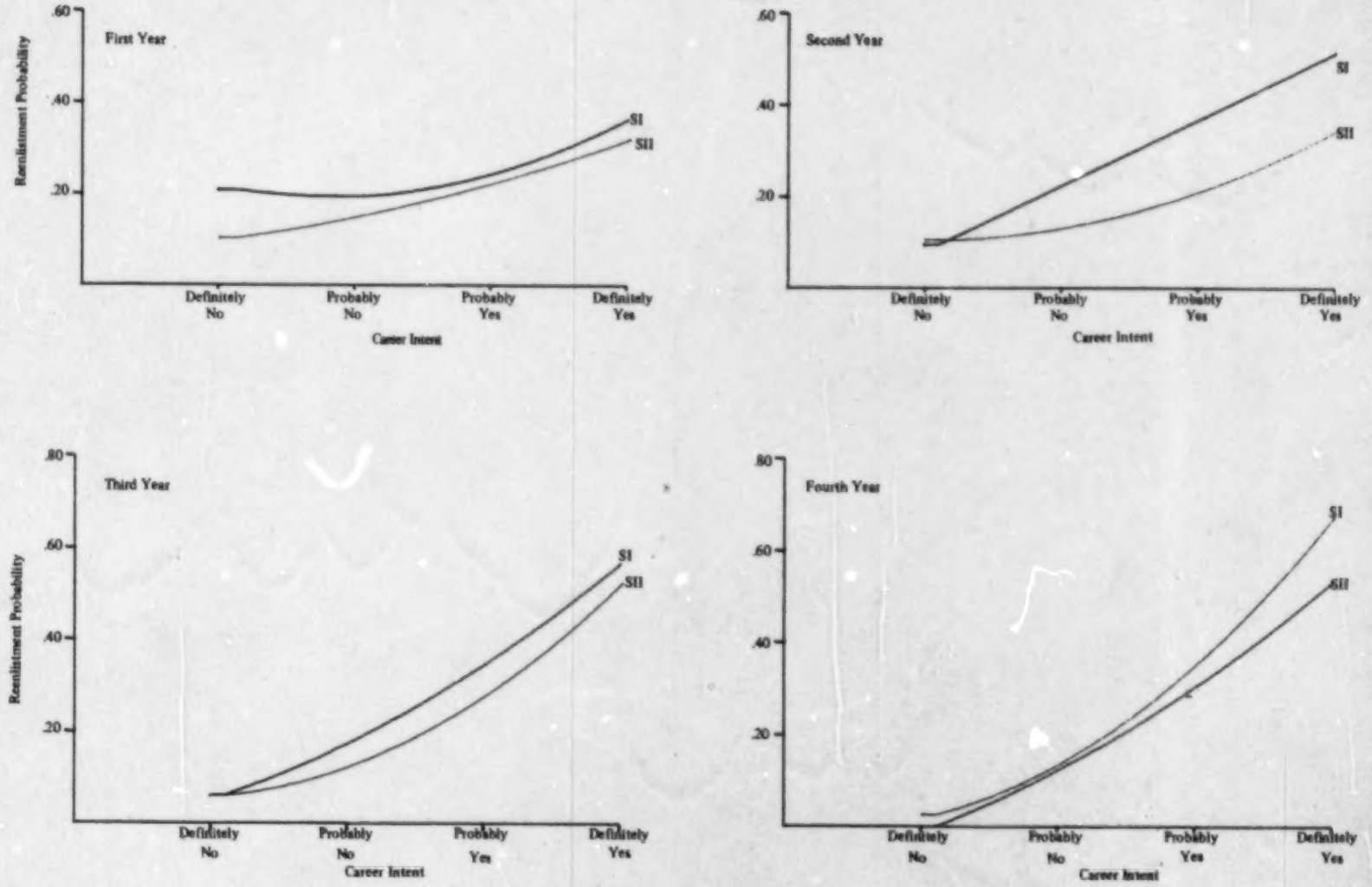

Figure 4. **Relationships between career intent and career decision for subgroups I and II by TAFMS year group.**

Table 14. **Results of Time 1-Time 2 Analysis**

AFSCs Included	R^2 Full[a]	R^2 Rest[b]	d_f1	d_f2	F
328X4	.2003	.1626	12	1239	4.86**
461X0	.1761	.1264	12	1499	7.54**
462X0	.1561	.1339	12	1689	3.70**
571X0	.1713	.1306	12	1967	8.05**

[a]Full model contains separate equations for Time 1 and Time 2.

[b]Restricted model contains a common equation for both Time 1 and Time 2.

**Significant beyond the .01 level.

IV. IMPLICATIONS FOR REENLISTMENT FORECASTING

Throughout this report, the focus of analysis has been on the probability of reenlistment for the individual job-incumbents. To illustrate the potential application of these techniques in forecasting group reenlistment rates, predictions based on models 2.1 through 2.4 were generated for each of the 30 largest AFSCs sampled in the study (Table 15). For every career field the following procedure was applied. First, a bivariate frequency distribution was obtained showing respondents at each TAFMS x career intent level. Let X_{ij} represent elements of this matrix corresponding to the number of persons at the ith career intent level and the jth TAFMS year group where i = 1,4 and j = 1,4. The percentage of reenlistments expected from the 4th TAFMS year group R_{P4} would be obtained by computing:

$$R_{P4} = \frac{A_{ij}\, X_{ij}}{X_{ij}} \times 100 \qquad \begin{cases} i = 1,4 \\ j = 4 \end{cases}$$

where A_{ij} represents the predicted probability of reenlistment for persons at the ith career intent level and the jth TAFMS year group (based on model 2 equations).

The expected percentage of reenlistments for persons in the 3rd, 2nd, and 1st TAFMS year groups would be obtained by setting j = 3, 2, and 1 respectively and recomputing. In the 252X1 career field, for example, enlistees in the 4th TAFMS year group responded to the career intent question as follows:

No	= 125 (X_{14})
Probably No	= 26 (X_{24})
Probably Yes	= 11 (X_{34})
Yes	= 14 (X_{44})

The respective probabilities of reenlistment (A_{ij}) associated with each response based on Model 2.4 are .03, .16, .40 and .74. Multiplying and summing corresponding A_{ij} X ij's yields (.03) (125) + (.16) (26) + (.40) (11) + (.74) (14) = 23, the number of expected reenlistments for respondents in their 4th year. Dividing by the total number of cases (176) across all categories and converting to a percentage value yields 13.1 percent.

Also shown in Table 15 for comparison purposes are estimates of the percentage of airman reenlistments based on the Simplex model[2] and the percent of actual reenlistments for each career

[2]These estimates are obtained from the number of respondents in the appropriate TAFMS year group who responded "yes" or "probably yes."

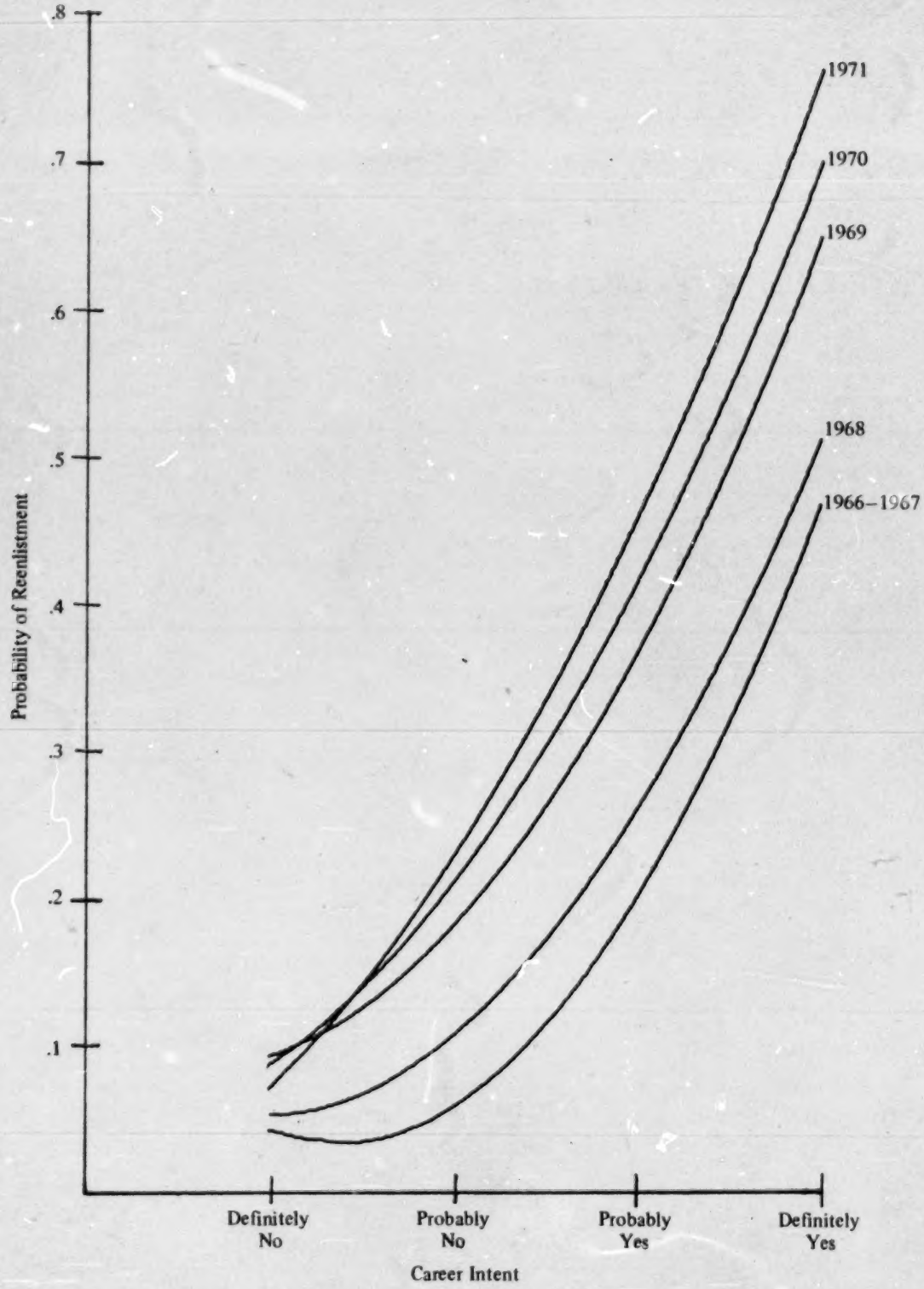

Figure 5. **Relationship between career intent and career decision by survey date.**

Table 15. **Illustration of Reenlistment Forecasting by Specialty**

		TAFMS at Time of Survey											
		First Year			Second Year			Third Year			Fourth Year		
		% Predicted Reenlistments			% Predicted Reenlistments			% Predicted Reenlistments			% Predicted Reenlistments		
Group ID	AFSC	Model 2	Simplex	% Actual Reenlistments	Model 2	Simplex	% Actual Reenlistments	Model 2	Simplex	% Actual Reenlistments	Model 2	Simplex	% Actual Reenlistments
1	252X1	17.4	15.5	35.2	14.7	12.9	25.9	17.5	17.0	26.5	13.1	14.2	15.3
2	272X0	18.5	25.0	45.8	15.6	16.6	38.0	16.6	14.4	25.8	17.0	19.4	17.7
3	276X0	17.0	13.3	13.3	14.7	11.8	11.0	15.1	13.0	11.7	15.6	16.1	12.6
4	291X0	16.6	10.0	27.1	14.5	9.9	18.0	12.8	7.1	12.8	10.9	8.9	9.5
5	293X3	16.3	9.5	20.6	14.4	10.1	20.6	14.6	15.2	24.7	11.3	10.8	11.5
6	304X4	15.8	15.4	15.4	14.0	11.2	24.1	14.9	11.4	16.8	10.2	9.7	10.3
7	325X0	17.0	33.3	0.0	15.0	17.2	21.9	14.7	12.8	18.0	8.2	6.3	9.7
8	328X0	17.7	23.5	52.9	15.6	18.5	12.5	17.8	20.4	13.4	19.4	24.3	20.3
9	328X1	19.9	28.6	42.9	16.4	21.0	14.8	16.8	16.2	15.7	18.0	21.2	17.3
10	328X4	25.1	50.0	50.0	17.8	31.0	15.6	16.4	16.8	18.6	11.6	9.9	15.1
11	421X2	17.7	16.4	23.6	15.8	17.0	22.0	16.7	17.2	19.1	12.9	11.2	12.7
12	421X3	18.1	32.0	40.0	14.7	14.1	25.2	16.9	16.2	27.4	12.2	11.6	15.0
13	431X1A	17.8	21.2	34.9	15.7	17.4	31.0	17.3	19.5	23.7	17.3	17.6	24.2
14	431X1C	18.3	24.7	31.6	16.3	20.0	29.7	16.7	16.5	25.7	18.6	19.7	21.2
15	431X1E	18.5	22.4	22.4	16.7	24.0	31.4	18.2	19.9	24.6	18.1	19.6	20.7
16	432X0	20.3	43.9	19.0	18.8	40.2	11.2	22.3	36.1	15.8	16.5	21.9	18.0
17	443X0G	21.0	50.0	20.0	16.3	24.5	37.7	23.9	34.9	31.6	17.6	21.3	19.9
18	461X0	18.7	25.9	16.1	15.5	19.4	12.6	18.0	22.6	14.0	12.3	13.4	15.3
19	462X0	18.6	30.3	15.5	16.6	25.0	12.3	15.3	14.3	16.6	11.9	10.5	13.6
20	511X0	18.2	23.2	17.0	15.6	19.7	9.2	17.3	21.5	10.3	12.2	12.1	10.3
21	534X0	18.5	24.1	16.8	16.2	20.0	19.2	16.3	13.9	10.7	11.8	8.7	10.2
22	551X0	17.9	19.4	32.3	16.2	21.7	12.7	15.0	13.8	4.1	11.8	10.1	11.3
23	571X0	18.8	28.4	14.2	17.8	31.4	14.6	20.2	27.6	18.1	18.8	21.3	16.9
24	605X0	17.6	18.8	12.8	14.7	15.0	7.9	16.2	15.1	6.5	17.7	21.4	19.0
25	631X0	17.7	21.6	23.1	15.2	14.0	29.2	14.9	13.1	9.9	16.2	17.0	17.4
26	702X0	20.5	36.4	18.2	15.3	20.5	23.2	18.2	19.8	26.0	18.1	25.3	23.2
27	811X0	18.5	25.1	15.5	16.8	25.5	9.2	17.8	21.6	6.4	15.4	18.6	11.7
28	902X0	15.5	8.3	17.2	14.9	15.4	25.0	14.4	11.8	20.0	10.8	10.2	12.0
29	922X0	15.7	6.3	21.9	14.1	11.6	19.0	15.4	16.3	22.7	14.4	17.1	19.4
30	981X0	16.6	13.0	13.0	13.9	8.7	16.1	13.2	10.4	14.2	12.5	9.8	9.8
Mean		18.2	23.8	23.7	15.7	18.8	20.0	16.7	17.5	17.7	14.4	15.3	15.4
S.D.		1.9	1.1	1.3	1.2	7.1	8.4	2.4	6.4	7.1	3.2	5.4	4.3
Avg % Error		9.44	12.05		7.89	10.02		5.69	6.94		2.12	2.46	

specialty. The average error of predictions based on Model 2 equations range from 9.4 percent for airmen in their first year to 2.1 percent for airmen in their fourth year of service. These error rates were consistently lower than for the corresponding Simplex estimates which differed from actual rates an average of 12 percent in the first year and 2.5 percent in the fourth year. It would be reasonable to assume that even greater accuracy in group reenlistment predictions would be obtained if more specific models had been used (i.e., those distinguishing between VRB vs non-VRB career fields, real-time survey date or ultimately, models developed scientifically for 2,3- or 5-digit career fields).

V. SUMMARY

The principal research findings from this study can be summarized as follows:

1. Cross-sectional comparisons of career intent responses by time in service indicated a relatively high degree of uncertainty about reenlistment during the first and second years. It was concluded that relatively few respondents had formulated definite career intentions either prior to enlistment or in the subsequent two years. Beginning in the third and continuing into the fourth year of enlistment, career intent becomes increasingly polarized toward the positive and negative extremes. Across all four years, there was a progressive downward trend in positive attitudes toward reenlistment. The negative trend with increased job tenure was noted for both the career intent and job attitude measures.

2. Measures of expressed job interest and utilization of talent and training appeared to be more related to each other than to the career intent item.

3. Each of the career intent and job attitude items was shown to be significantly related to eventual career decisions. The magnitude of the relationships between career intent and career decision, however, was somewhat larger than for either of the job attitude statements. Moreover, it was noted that the job attitude measures made little unique contribution to the prediction of career decisions with prior knowledge of career intent.

4. The accuracy of the career intent statement in predicting career decisions was found to be a function of the time interval between survey administration and time of decision. Statements obtained during the last two years of enlistment were considerably more accurate than statements obtained during the first two years. Validities across the first four years of service were .14, .17, .37 and .53, respectively.

5. The functional form of the relationship between career intent and decision appeared to be curvilinear, particularly for persons in their third and fourth years of service.

6. Career intent statements were found to have different validities and functional relationships with career decisions when specific AFSCs were compared. Between-specialty differences persisted when specialties were grouped by their first two or first three digits or according to aptitude requirements.

7. Homogeneous grouping exercises performed on equations for 30 separate 5-digit AFSCs indicated the feasibility of reducing the number of final equations retained to a more manageable set. The last stage of the exercise identified two groups of AFSCs which appeared to differ primarily on the basis of those with an associated VRB (multiple 3 or 4) versus all others. It was concluded that two or more equations would be required to obtain maximum predictive efficiency.

8. Based on limited data from Time 1-Time 2 surveys in the same career fields and observed real-time differences between AFSCs grouped according to year of survey administration, it was concluded that periodic updating the prediction system at least every 2 to 3 years could be expected to improve forecasting accuracy substantially.

9. The use of total-sample equations to forecast the percentage of airmen reenlisting in 30 selected specialties yielded average errors of prediction ranging from 2 percent for airmen surveyed in their fourth year of service to 9 percent for first-year airmen. These estimated reenlistment rates were consistently more accurate for all year groups than similar estimates based on the simplex model, although differences in accuracy appeared to be quite small in comparisons at the fourth year.

10. The results of these analyses support the basic statistical feasibility of using career intent statements obtained during the first-term (particularly years 3 and 4) as advanced indicators of career decisions at the individual or group level. The evidence suggests that statements of intent might also serve as useful interim criteria in evaluating personnel selection methods or modifications in policies and procedures designed to increase career retainability among the enlisted force.

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APPENDIX A: AIR FORCE SPECIALTIES

Table A1. Air Force Specialties Included in the Total Sample

AFSC	Study Code	Date of Survey	AFSC	Study Code	Date of Survey	AFSC	Study Code	Date of Survey
204X0	2040	Aug 1967	341X1	3411	Jan 1971	542X1	5421	Oct 1971
206X0	2060	Aug 1967	342X0	3420	Jun 2968	543X0	5430	Jun 1967
233X4	2334	Dec 1970	361X3	3613	Mar 1969	545X0	5450	Aug 1970
234X0	2340	Dec 1970	361X4	3614	Mar 1969	547X0A	547A	Aug 1970
236X1	2361	Dec 1970	362X4	3621	Jun 1971	547X0	5470	Aug 1970
252X1	2521	Nov 1969		3624	Oct 1969	551X0	5510	Jul 1968
271X0	2710	Sep 1971	402X0	4020	Jul 1970	551X1	5511	Jul 1968
272X0	2720	Sep 1970	404X0	4040	Jul 1970	563X0	5630	May 1968
276X0	2730	Jun 1969	421X2	4212	Jan 1970	566X0	5660	May 1968
274X0	2740	Sep 1971	421X3	4213	Mar 1967	571X0	5710	Apr 1968
291X0	2910	Feb 1970		4218	Oct 1970		5715	Oct 1971
293X3	2930	Feb 1970	422X0	4220	Mar 1969	605X0	6050	Mar 1968
328X0	3010	Mar 1968	422X1	4221	Jan 1969	605X1	6051	Mar 1968
328X1	3011	Mar 1968	423X0	4230	Jan 1968	607X0	6070	Sep 1971
	3016	Jun 1971	424X0	4240	Feb 1968	611X0	6110	Jan 1969
328X4	3014	Nov 1967	431X1A	431A	Feb 1969	612X0	6120	Jan 1969
	3019	Aug 1961	431X1C	431C	Feb 1969	631X0	6310	Jan 1969
303X1	3031	Feb 1971	431X1E	431E	Feb 1969	631X0A	631A	Jan 1969
303X2	3032	Jan 1970	431X1F	431F	Feb 1969	651X0	6510	Feb 1970
303X3	3033	Nov 1968	431X0	4310	Mar 1969	671X1	6711	May 1967
304X0	3040	Jul 1970	431X1	4319	Feb 1969		6719	Jan 1970
304X1	3041	Mar 1971	431X0	4320	Nov 1966	671X3	6713	May 1967
304X4	3044	Jul 1970	432X1	4321	Sep 1971		6718	Jan 1970
305X4	3051	Jan 1969	433X0	4330	Mar 1971	702X0	702A	Nov 1971
	3053	Aug 1967	443X0G	4430	Jan 1971		7020	Nov 1971
307X0	3070	Apr 1968	461X0	4610	Oct 1967	732X0	7320	Jun 1971
317X0	3170	Jan 1970		4615	Mar 1971	751X0	7510	Feb 1967
321X0K	321K	Nov 1970	462X0	4620	Oct 1967	811X0A	811A	Apr 1968
321X0L	321L	Nov 1970		4625	Mar 1971	811X0	8110	Apr 1968
322X1A	322A	Jul 1967	464X0	4640	Mar 1971	901X0	9010	Apr 1971
322X1F	322F	Jul 1967	472X0	4720	Jul 1968	902X0	9020	Jul 1970
322X1N	322N	Jul 1967	472X1	4721	Jul 1968	902X2	9022	Jan 1971
322X1P	322P	Jul 1967	473X0	4730	Jul 1968	903X0	9030	Oct 1967
324X0	3240	Mar 1970	473X1	4731	Jul 1968	906X0	9060	Nov 1966
325X0A	325A	Apr 1968	510XX	6810	Nov 1967	915X0	9150	Sep 1966
325X0	3250	Apr 1968	511X0	6850	Nov 1967	922X0	9220	Mar 1970
	3255	Aug 1971	511X1	6870	Nov 1967	981X0	9810	Nov 1969
325X1	3251	Mar 1969	5434X0	5346	Sep 1969	982X0	9820	May 1967

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